

45. A device manufacturing method, comprising the steps of:
exposing a substrate by use of an exposure apparatus as recited in Claim 38;
and
etching the exposed substrate.

46. A device manufacturing method, comprising the steps of:
exposing a substrate by use of an exposure apparatus as recited in Claim 40;
and
etching the exposed substrate.

REMARKS

Applicant requests favorable consideration and allowance of the subject application in view of the preceding amendments and the following remarks.

Claims 1, 4-7, 9, 11, 12, and 14-46 are presented for consideration. Claims 1, 6, 9, 14-18, 25, 31, 36, 38, and 40 are independent.

Claims 1, 6, 9 and 14 have been amended to clarify features of the invention, while claims 25-46 have been added to recite additional features of the invention. Support for these changes can be found in the application, as filed. Accordingly, no new matter has been added.


Claims 1, 4-7, 9, 11, 12, and 14-18 were previously allowed in this application.

Applicant submits that dependent claims 19-24 added in the Preliminary Amendment filed on November 20, 2001, likewise should be deemed allowable. In addition, Applicant

submits that newly presented claims 25-46 patentably define features of the exposure apparatus and the device manufacturing method of the present invention. Therefore, Applicant submits that this application is in condition for allowance. Favorable consideration and an early passage to issue are requested.

Applicant's undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should be directed to our address listed below.

Respectfully submitted,



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APPENDIX A

IN THE CLAIMS:

1. (Amended) An exposure apparatus, comprising:

an illumination optical system for illuminating an original with an F₂ excimer laser;

a projection optical system for projecting a pattern of the original onto a substrate to be exposed;

gas purging means for replacing a gas in an inside space, which accommodates optical components of at least one of said illumination optical system and said projection optical system, with a dry gas;

a hygrometer, disposed in the inside space, for measuring conditions in the inside space and for producing an output; and

a controller for controlling said gas purging means on the basis of the output of said hygrometer.

6. (Amended) An exposure apparatus, comprising:

an illumination optical system for illuminating an original with ultraviolet light;

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a projection optical system for projecting a pattern of the original onto a substrate to be exposed;

gas purging means for replacing a gas in an inside space, which contains optical components of at least one of said illumination optical system and said projection optical system, with a particular gas[, said optical components comprising at least one lens];

passage means, mutually communicating spaces separated by said optical components, for assisting in gas purging by said gas purging means; and

[a support] supports for supporting said [at least one lens] optical components,

wherein said passage means comprises [an aperture] apertures formed in said [support] supports or said optical components, and

wherein a straight line connecting apertures of a pair of adjacent supports of said passage means is not parallel to a plane defined by an optical axis of a lens which is one of the optical components and a straight line connecting apertures of another pair of adjacent supports.

9. (Amended) An exposure apparatus comprising:

an illumination optical system for illuminating an original with ultraviolet light;

a projection optical system for projecting a pattern of the original onto a substrate to be exposed;

gas purging means for replacing a gas in an inside space, which contains optical components of at least one of said illumination optical system and said projection optical system, with a particular gas, said optical components comprising at least one lens; and

passage means, mutually communicating spaces separated by said optical components, for assisting in gas purging by said gas purging means, wherein said passage means comprises a notch provided on said at least one lens.

14. (Amended) An exposure apparatus, comprising:

an illumination optical system for illuminating an original;

a projection optical system for projecting a pattern of the original onto a substrate to be exposed;

gas purging means for replacing, with a particular gas, a gas in an inside space which contains optical components of at least one of said illumination optical system and said projection optical system, said optical components comprising at least one lens; and

a plurality of passage means, mutually communicating spaces separated by said optical components, for assisting in gas purging by said gas purging means,

wherein a straight line connecting an adjacent pair of said plurality of passage means provided in a same casing for gas purging, is not parallel to an optical axis of said at least one lens and a straight line connecting another pair of said plurality of passage means, which is one of the optical components.

17. (Amended) A device manufacturing method, comprising:

illuminating an original with ultraviolet light using an illumination optical system;

projecting, using an illumination optical system, a pattern of the original onto a substrate to be exposed to manufacture a device;

replacing, using gas purging means, an inside space, which contains optical components of at least one of the illumination optical system and the projection optical system, with a particular gas, the optical components comprising at least one lens; and

mutually communicating, using passage means, spaces separated by the optical components, for assisting in gas purging by the gas purging means, the passage means including a notch provided on the at least one lens.